

Multi-Disciplinary Multi-Fidelity Design Environment, Phase II

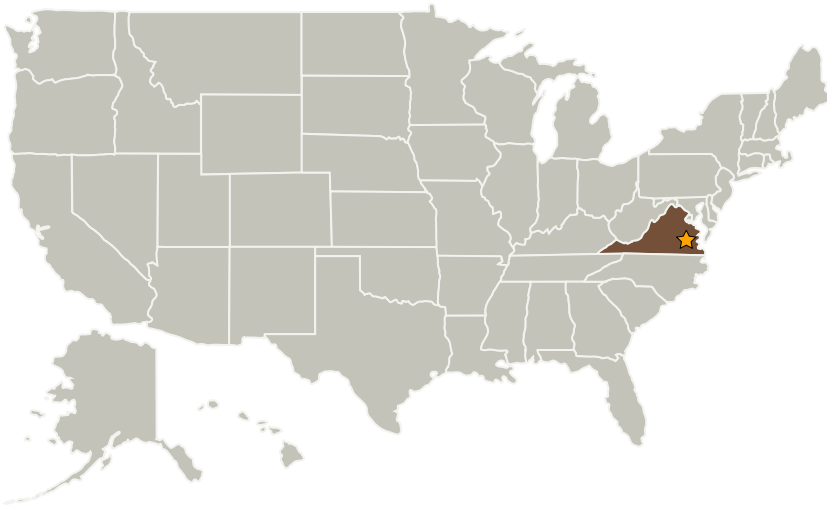
Completed Technology Project (2007 - 2009)



Project Introduction

To meet the design challenges of tomorrow, NASA and industry require advancements in the state-of-the-art for physics-based design and analysis frameworks. In particular, NASA needs the ability to make more use of physics-based models earlier in the design process. This will allow engineers to more accurately capture the complex coupling between engineering disciplines and to more accurately simulate the complex behavior of novel design configurations. Key technical barriers include long execution times, model and data complexity, and geometry management. In the Phase II project, Phoenix Integration will expand on the successful Phase I prototypes to develop new technologies and user interfaces that will help overcome these barriers. This project will focus on (1) the development of a flexible capability for implementing Multi-Disciplinary Analysis and Optimization (MDAO) strategies (such as multi-fidelity) in ModelCenter, (2) the creation of a flexible geometry visualization and monitoring capability for high-fidelity system models, and (3) the extension of Phoenix Integration's "Plug-In" infrastructure to better support a wide range of high-fidelity analysis and geometry management tools (CAD/CAE tools, meshing tools, mesh morphing tools). These technologies will combine with other NASA funded technologies to create a robust physics-based design and analysis framework for designing next generation air vehicles.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Phoenix Integration	Supporting Organization	Industry	Blacksburg, Virginia

Primary U.S. Work Locations

Virginia

Project Transitions

**November 2007:** Project Start**November 2009:** Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
 - └ TX11.5 Mission Architecture, Systems Analysis and Concept Development
 - └ TX11.5.3 Tools and Methodologies for Vehicle or Concept Definition Activities